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Kansas Entomological Society
Vol. 21 October, 1948 Number 4

SOME NEW SPECIES OF DELPHACODES (Homoptera, Fulgoridae, Delphacinae)

R. H. BEAMER*
Lawrence, Kansas

Part V

46. Delphacodes sucinea n. sp.

Brachypterous form:

Resembling a **Pissonotus** in general appearance and obviously closely related to **Delphacodes truncata** Beamer, according to genital structure. Can be separated from this species by being generally honey colored, by the narrow white stripe on apices of most elytra, by the sharp tooth on ventro-caudal margin of pygofer and by a pair of large, sharp processes on ventral margin of aedeagus near base. Length: ♂ 2mm; ♀ 2.2 mm.

Structure: First antennal segment slightly more than twice as long as wide; front scarcely one half longer than wide, widest at apical third, narrowed to each end, more so toward base, definitely tricarinate; crown almost twice as long as basal width, apex rounded, carinae distinct at base, almost absent at apex; elytra about as wide as long, veins indistinct, apices truncate, mesal margins extending farthest caudad; genital capsule narrowed, almost withdrawn into abdomen.

Color: General color honey brown, surface shiny; elytra usually with a white dash on apical margins; genital parts visible externally, almost black.

Genitalia. In lateral view: pygofer more than twice as wide as long with a prominent tooth at middle of caudo-ventral margin; anal segment more or less rectangular with outer caudal corners rather projecting, not considered processes; aedeagus curved ventrad at base, narrowed near outer third, apex rounded, a pair of large, sharp processes near basal third on ventral margin, aedeagal brace not visible; styles almost straight with sides nearly parallel, tapered on outer third to quite sharp apices; in caudal view: aedeagal brace not extended dorsad; styles with sides almost parallel, extended out on basal half, then curving in to angularly narrowed apices.

Holotype ♂, allotype ♀, 52 ♂ and 15 ♀ paratypes Saucier, Miss., March 5, 1947, R. H. Beamer; Other paratypes: 4♂♂ and 1♀, Ocean Springs, Miss., March 3, 1947, R. H. Beamer; 1♀ Live Oak, Fla., Jan. 1, 1931, P. W. Oman; 1♂ Hilliard, Fla., Oct. 5, 1938, P. W. Oman; 1♂, Zolfo Springs, Fla., July 15, 1939, P. W. Oman; 1♀ North of Picnic, Fla., Sept. 8, 1938, P. W. Oman.

Types and paratypes in Snow Entomological Collections; paratypes in United States National Museum.

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*Contribution from the Department of Entomology, University of Kansas.

47. **Delphacodes penelutea** n. sp.

Brachypterous form:

Resembling **Delphacodes lutea** Beamer but elytra truncate at apices and extending only to about middle of abdomen, while in **lutea** the apices of elytra are rounded and extend almost to genital capsule. Length, ♂ 2.2 mm.; ♀ 2.3 mm.

Structure: First segment of antennae about as long as wide; front not quite twice as long as wide, widest near apical third, narrowed toward each end, more so toward base, distinctly tricarinate; crown about one-third longer than wide, apex rounded, carinae fairly distinct; elytra about as wide as long, semihyaline, veins thickened, apices truncate, extending about to middle of abdomen.

Color: General color stramineous, abdomen of male usually mostly quite dark brown.

Genitalia: In lateral view: pygofer more or less trapezoidal, dorsal margin definitely narrower than ventral; anal segment without processes; aedeagus about four times as wide at base as at ventral bend near apex, two teeth ventrally on each side near middle, 3-4 teeth on dorsal margin at bend, apex sharp; aedeagal brace triangular widest at base; styles almost straight, enlarged at apex; in caudal view: aedeagal brace not extended dorsad; styles widest at base, sinuate on outer margin, more or less bifid at apices.

Holotype ♂, allotype ♀, 40 ♂ and 22 ♀ paratypes, Saucier, Miss., March 5, 1947, R. H. Beamer; other paratypes: 1 ♂ and 3 ♀ ♀, Woodville, Fla., March 7, 1947, R. H. Beamer; 4 ♂ ♂ and 2 ♀ ♀, Naples, Fla., March 16, 1947; R. H. Beamer; 12 ♂ ♂ and 1 ♀, Homestead, Fla., March 14, 1947, R. H. Beamer; 2 ♂ ♂ same place and date, L. D. Beamer; 1 ♂ Wakulla, Fla., July 11, 1939, P. W. Oman; 1 ♂ Sanford, Fla., Jan. 15, 1926, E. D. Ball.

Types and paratypes in Snow Entomological Collections; paratypes in United States National Museum.

48. **Delphacodes paraparvula** n. sp.

Brachypterous form:

Resembles **Delphacodes parvula** Ball, but anal segment of male with two pairs of processes instead of none. Length ♂ 1.5 mm.; ♀ 2.8 mm.

Structure: First segment of antennae twice as long as wide; front not quite twice as long as wide, widest near apical third, narrowed toward each end, distinctly tricarinate; crown about one-third longer than wide, apex rounded, carinae definite at base more or less obscure on apex; elytra semihyaline, about twice as long as wide, ending just before genital capsule, apices rounded, veins raised.

Color: General color stramineous, occasionally more or less indications of darker longitudinal rows of spots on abdomen, styles and processes of anal segment dark brown.

Genitalia: In lateral view; pygofer more or less rectangular, posterior ventral corner greatly extended; anal segment with two pairs of sharp processes, the first many times longer than second; aedeagus widest at base,

gently narrowing, curving ventrad from near middle to apex, with a pair of truncate teeth on right side near outer third and a pair of sharp teeth on left side in same position; aedeagal brace visible, oval in shape, notched on dorsal margin; styles with very large heels narrowed to more or less avicephaliform apices; in caudal view: aedeagal brace broad, extended dorsad about half its width; styles almost straight with avicephaliform apices, beaks on inner margin long and almost parallel sided.

Holotype ♂, allotype ♀, 7 ♂ and 2 ♀ paratypes. Pearlington, Miss., March 3, 1947, R. H. Beamer.

Types and paratypes in Snow Entomological Collections.

49. **Delphacodes concava** n. sp.

Brachypterous form:

Resembling **Delphacodes paraparvula** Beamer but elytra longer, usually reaching genital capsule, anal segment of male with one pair of processes, and aedeagal brace in caudal view undercut at each side. Length, ♂ 2.4 mm.; ♀ 2.7 mm.

Structure: First segment of antennae slightly more than twice as long as wide; front very slightly more than twice as long as wide, widest near apical third, slightly narrowed toward each end, definitely tricarinate; crown about one-third longer than basal width, apex rounded, carinae distinct; elytra semihyaline, about twice as long as wide, reaching or almost reaching genital capsule, apices rounded, veins thickened.

Color: General color stramineous, darker spot above middle and hind coxae and surrounding ocelli, abdomen generally dark brown with first segment golden yellow or dorsum.

Genitalia: In lateral view; pygofer about one-third wider than long, widest at base; anal segment with a pair of processes near middle; aedeagus widest at base, gradually narrowed and curved ventrad to tip, with four teeth on dorsal margin; aedeagal brace not visible; styles more or less pediform, narrowed on outer half; in caudal view: aedeagal brace extended dorsad about basal width, each margin under cut; styles narrowed in middle, apices avicephaliform, beak on inner margin, very broad.

Holytype ♂, allotype ♀, 24 ♂ and 7 ♀ paratypes, Woodville, Fla., March 7, 1947, R. H. Beamer; other paratypes: 4 ♂ ♂ and 4 ♀ ♀, Tallahassee, Fla., March 7, 1947, R. H. Beamer; 1 ♂ same place and date, L. D. Beamer; 1 ♂, Sanford, Fla., Jan. 7, 1925, E. D. Ball; 1 ♀ Sanford, Fla., Feb. 16, 1926, E. D. Ball; 3 ♀ ♀ Sanford, Fla., Aug. 9, 1926, E. D. Ball; 2 ♂ ♂, Sanford, Fla., July 22, 1926, E. D. Ball; 1 ♂ Way Cross, Ga., March 18, 1947, R. H. Beamer.

Types and paratypes in Snow Entomological Collections; paratypes in United States National Museum.

50. **Delphacodes ardentis** n. sp.

Macropterous form:

Resembling **Delphacodes bocana** Beamer but dorsum darker, with a median longitudinal light stripe, aedeagal brace visible in lateral view and greatly extended dorsad in caudal view. Length, ♂ 3 mm.; ♀ 3.5 mm.

Structure: First segment of antennae about twice as long as wide; front slightly more than twice as long as wide, widest near apical third, narrowed toward each end, slightly more so toward base, distinctly tricarinate; crown a little longer than basal width, carinae distinct; elytra about one-third longer than abdomen, widest near apex.

Color: General color stramineous; spot on hind coxae darker; area between carinae of front dark brown to black; dorsum with median longitudinal, narrow white line; elytra semihyaline with veins much darker, especially on outer half.

Genitalia: In lateral view; pygofer more or less rectangular, ventral margin about twice as long as dorsal, with small tooth at posterior corner; anal segment with pair of straight, sharp-pointed processes; aedeagus almost straight, about three times as wide at base as on outer third, three or four teeth on dorsal margin of outer third, two larger ones on right side near middle; aedeagal brace visible, triangular in shape, narrowed at base; styles widest near apices, more or less pediform; in caudal view: aedeagal brace greatly extended dorsad, widest at base; styles more or less avicephaliform at apices with beak on inner margin.

Holotype ♂, allotype ♀, Palatka, Fla., March 10, 1947, R. H. Beamer; 2 ♂ paratypes, Royal Palm Park, Fla., March 16, 1947, R. H. Beamer.

Brachypterous form:

Like the macropterous form except hind wings wanting and front wings reaching about to tip of abdomen.

Holomorphotype ♂ and 1 ♀ paramorphotype, Palatka, Fla., March 10, 1947, R. H. Beamer.

All types in the Snow Entomological Collections.

51. **Delphacodes plenatra** n. sp

Brachypterous form:

Resembling **Delphacodes opaca** Beamer but smaller, aedeagus curved ventrad and genital capsule not flaring in caudal view. Length, ♂ 1.2 mm.; ♀ 1.6 mm.

Structure: First segment of antennae about as wide as long; front about one-third longer than wide, widest near outer third, narrowed toward each end, more so toward base, distinctly tricarinate, median carina enlarged; crown slightly longer than wide, carinae distinct; elytra about as wide as long, reaching to about second segment of abdomen, veins raised, apices rounded; genital capsule not flaring in caudal view.

Color: Male usually dark brown or black, female varying from stramineous to dark brown or black. Basal half of crown often much lighter.

Genitalia: In lateral view: pygofer about one-third longer on ventral than on dorsal margin; anal segment with one pair of more or less avicephaliform processes; aedeagus widest near middle, furcate on outer half, generally curved ventrad; aedeagal brace not visible; styles barely visible, apices narrowed; in caudal view: aedeagal brace not extended dorsad, slightly V-shaped; styles very large on basal half, narrowed to fourth basal width on outer half.

Holotype ♂, allotype ♀, 88 ♂ and 127 ♀ paratypes, Chino Valley, Ariz., July 12, 1947, R. H. Beamer; other paratypes: 18 ♂ and 8 ♀♀, Mescalera, N.M., June 27, 1947, R. H .Beamer; 16 ♂♂ and 10 ♀♀, Belen, N. M., July 1, 1947, R. H. Beamer; 51 ♂♂ and 21 ♀♀, Chiricahua Mts., Ariz., July 5, 1947, R. H. Beamer; 27 ♂♂ and 15 ♀♀, Vernal, Utah, Aug. 2, 1947, R. H. Beamer.

Macropterous form:

Like the brachypterous form except with flight wings which extend about one-third their length beyond the abdomen.

Holomorphotype ♀ and 8 ♀ paramorphotypes, Chino Valley, Ariz., Aug. 12, 1947, R. H. Beamer.

Types and paratypes in the Snow Entomological Collections.

52. **Delphacodes venusta** n. sp.

Macropterous form:

Resembling **Delphacodes gillettei** (Van D.) but much lighter in color, aedeagal brace of male extended dorsad in caudal view with undercut sides. Length to tip of wings, ♂ 5 mm.

Structure: First antennal segment about as long as wide; front twice as long as wide, widest near middle, narrowed toward each end, slightly more so toward base; crown distinctly longer than wide, carinae distinct; elytra extend about one-third their length beyond abdomen, widest beyond cross veins, veins raised.

Color: General color stramineous, an occasional specimen with usual darker regions, the average specimen with only a darker spot above hind coxae.

Genitalia: In lateral view: pygofer more or less rectangular; anal segment with one pair of heavy, sharp processes; aedeagus long, sinuate, enlarged on outer third with about three rows of short teeth; aedeagal brace narrow, sides parallel; styles pediform, apices narrowed; in caudal view: aedeagal brace extended dorsad, deeply undercut on either side, apex rounded; styles widest at base, narrowed to rather sharp apices.

Holotype ♂ and 17 ♂ paratypes, Ft. Davis, Tex., June 22, 1947, R. H. Beamer.

Types in the Snow Entomological Collections.

53. **Delphacodes compta** n. sp.

Brachypterous form:

Resembling **Delphacodes lineatipes** (Van D.) but with cross bands of white. Length, ♂ 1.7 mm.; ♀ 2 mm.

Structure: First segment of antennae slightly longer than wide; front one-third longer than wide, widest near apical third, narrowed to each end, more so toward base, strongly tricarinate; crown slightly longer than wide, widest at apex, carinae distinct; elytra as wide as long, apices truncate, venation not distinct.

Color: General color dark brown to black; carinae of front and crown stramineous, this light portion ending near middle of crown; posterior half of pronotum and apical third of elytra almost white; semblance of broad,

median, dorsal stripe on apical half of abdomen lighter, usually last three abdominal segments with a light spot on lateral margin; legs fulvous.

Genitalia: In lateral view: pygofer narrowed on dorsal margin, with definite tooth on caudo-ventral corner; anal segment without teeth in usual sense but with a short, sharp flange on caudo-dorsal corner; aedeagus widest at base, slightly narrowing and curving ventrad to tip with about four retrorse teeth on dorsal margin of outer half; aedeagal brace not visible; styles widest at base, tapering to apices; in caudal view; aedeagal brace not extended dorsad; styles widest at base, narrowing to more or less avicephaliform apices with beak on inner margin.

Holotype ♂, allotype ♀, 33 ♂ and 28 ♀ paratypes, Del Mar, Calif., July 22, 1947, R. H. Beamer.

Types in Snow Entomological Collections.

54. **Delphacodes munda** n. sp.

Brachypterous form:

Resembling **Delphacodes campestris** (Van D.) but male with black spot on pronotum back of each eye and both sexes with region between frontal carinae brown to black. Length, ♂ 1.9 mm.; ♀ 2.3 mm.

Structure: First segment of antennae twice as long as wide; front slightly more than twice as long as wide, widest near middle, very slightly narrowed at apex, more so toward base, definitely tricarinate; crown as long as wide, carinae definite; elytra reaching genital capsule, apices rounded.

Color: General color stramineous; parts of coxae, spots above them, most of genae, area between frontal carinae, spot on pronotum back of each eye, sides of scutellum and more or less dorsum of abdomen brown or black.

Genitalia: In lateral view: pygofer about as long as wide; anal segment with a pair of curved, sharp-pointed processes, about as long as basal width; aedeagus widest at base, narrowed to apex, curving ventrad on outer third, four teeth on dorsal margin near base and about six teeth along ventral margin near middle; aedeagal brace not visible; styles widest at base, narrowed on outer third; in caudal view: aedeagal brace extended dorsad about its basal width; styles widest at base, almost parallel-sided on

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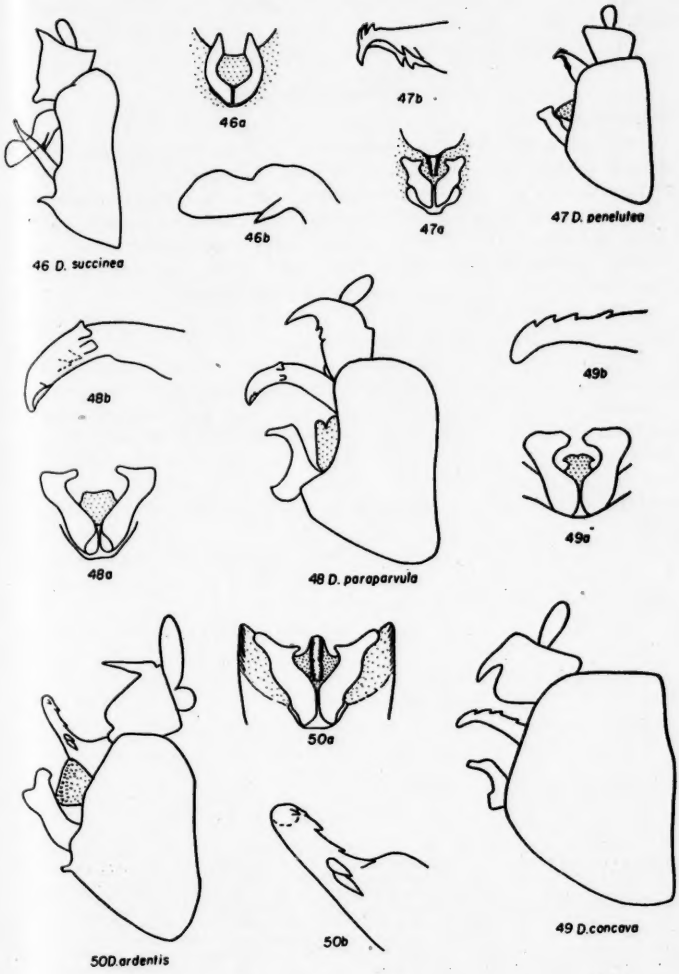
PLATE VII

46. Lateral view of genital capsule of male of **Delphacodes sucinea** Beamer.
46a. Caudal view of styles and aedeagal brace of **Delphacodes sucinea** Beamer.
46b. Lateral view of aedeagus enlarged of **Delphacodes sucinea** Beamer.
47. Lateral view of genital capsule of male of **Delphacodes penelutea** Beamer.
47a. Caudal view of styles and aedeagal brace of **Delphacodes penelutea** Beamer.
47b. Lateral view of aedeagus enlarged of **Delphacodes penelutea** Beamer.
48. Lateral view of genital capsule of male of **Delphacodes paraparvula** Beamer.
48a. Caudal view of styles and aedeagal brace of **Delphacodes paraparvula** Beamer.
48b. Lateral view of aedeagus enlarged of **Delphacodes paraparvula** Beamer.
49. Lateral view of genital capsule of male of **Delphacodes concava** Beamer.
49a. Caudal view of styles and aedeagal brace of **Delphacodes concava** Beamer.
49b. Lateral view of aedeagus enlarged of **Delphacodes concava** Beamer.
50. Lateral view of genital capsule of male of **Delphacodes argentis** Beamer.
50a. Caudal view of styles and aedeagal brace of **Delphacodes argentis** Beamer.
50b. Lateral view of aedeagus enlarged of **Delphacodes argentis** Beamer.


46 D. succinea
46a
46b
47b
47a
47 D. penelutea
48b
48a
48 D. paraparvula
49b
49a
50a
50b
50D. ardentis
49 D. concava

basal two-thirds, avicephaliform at apices, long, slender beak on inner margin.

Holotype ♂, allotype ♀, 1 ♂ and 1 ♀ paratype, Craig, Colo., August 3, 1947, R. H. Beamer.

Types in Snow Entomological Collections.

55. **Delphacodes alata** n. sp.

Brachypterous form:

Resembling **Delphacodes paraparvula** Beamer but aedeagus of male straight instead of curved ventrad. Length, ♂ 2 mm.; ♀ 2.5 mm.

Structure: First segment of antennae twice as long as wide; front about twice as long as wide, widest on apical third, narrowed toward each end, much more so toward base; crown one-third longer than wide, rounded at apex, carinae indistinct on anterior half; elytra about one-third longer than wide, apices narrowed and rounded, veins raised.

Color: General color stramineous; spot above hind coxae darker; only indications of other usual darker areas.

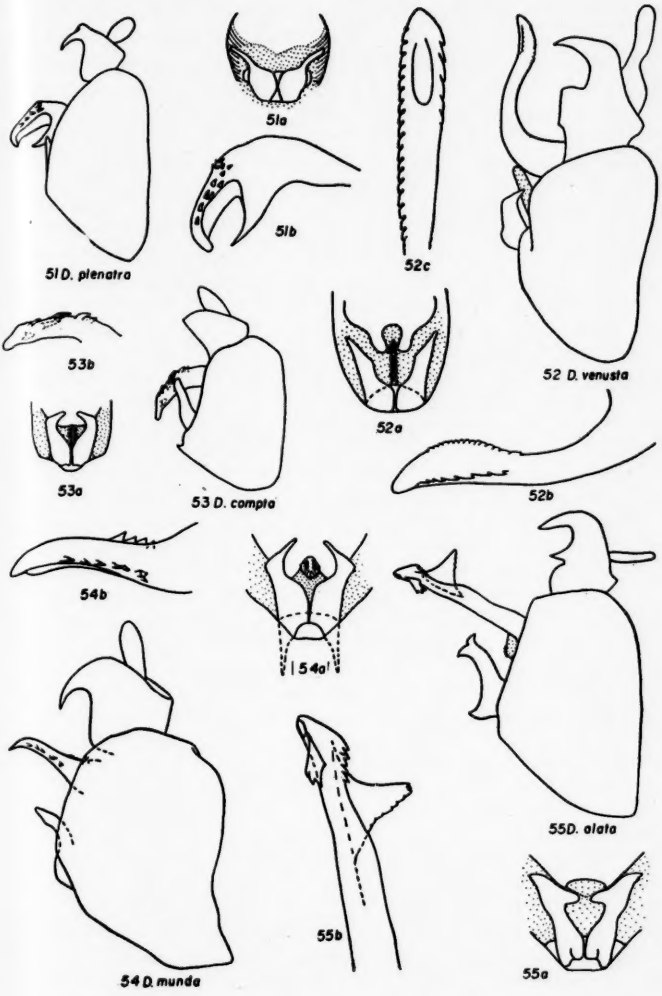
Genitalia: In lateral view: pygofer more or less rectangular, narrowed posteriorly; anal segment with two pairs of processes, the second very short; aedeagus long and straight, slightly tapered from base, a large, broad, flat process on left side of shaft near apex, another smaller serrated process on right side at tip; aedeagal brace small, more or less rectangular; styles pediform, heels large, tips bifid; in caudal view: aedeagal brace broad, slightly extended dorsad; styles enlarged at apices more or less avicephaliform.

Holotype ♂, allotype ♀, Big Pine Key, Fla., March 15, 1947, R. H. Beamer; paratypes: 2 ♂♂ and 1 ♀, Naples, Fla., March 16, 1947, R. H. Beamer; 1 ♂, Homestead, Fla., March 14, 1947, R. H. Beamer.

Types and paratypes in Snow Entomological Collections.

PLATE VIII

51. Lateral view of genital capsule of male of **Delphacodes plenatra** Beamer.
51a. Caudal view of styles and aedeagal brace of **Delphacodes plenatra** Beamer.
51b. Lateral view of aedeagus enlarged of **Delphacodes plenatra** Beamer.
52. Lateral view of genital capsule of male of **Delphacodes venusta** Beamer.
52a. Caudal view of styles and aedeagal brace of **Delphacodes venusta** Beamer.
52b. Lateral view of aedeagus enlarged of **Delphacodes venusta** Beamer.
52c. Ventral view of aedeagus enlarged of **Delphacodes venusta** Beamer.
53. Lateral view of genital capsule of male of **Delphacodes compta** Beamer.
53a. Caudal view of styles and aedeagal brace of **Delphacodes compta** Beamer.
53b. Lateral view of aedeagus enlarged of **Delphacodes compta** Beamer.
54. Lateral view of genital capsule of male of **Delphacodes munda** Beamer.
54a. Caudal view of styles and aedeagal brace of **Delphacodes munda** Beamer.
54b. Lateral view of aedeagus enlarged of **Delphacodes munda** Beamer.
55. Lateral view of genital capsule of male of **Delphacodes alata** Beamer.
55a. Caudal view of styles and aedeagal brace of **Delphacodes alata** Beamer.
55b. Lateral view of aedeagus enlarged of **Delphacodes alata** Beamer.


51a
51b
51 D. plenatra
52c
52 D. venusta
53b
52a
53a
53 D. compta
52b
54b
54a
55D. alata
54 D. munda
55b
55a

SOME BICOLORED MOSQUITO LARVAE

OSMOND P. BRELAND
Austin, Texas.

The larvae of mosquitoes in the United States usually do not exhibit two contrasting colors; in fact, the phenomenon is so rare as to cause comment when such larvae are discovered. The writer has noted but two species of mosquitoes in the United States that have been reported as having bicolored larvae. These are **Aedes bimaculatus** (Coquillet) (Ross 1943), and **Aedes tormentor** Dyar and Knab (King, Bradley and McNeel 1944). This condition is apparently not invariable for these species. Ross considers that this coloring is "remarkable" for **A. bimaculatus,** while King, Bradley and McNeel state that only an occasional specimen of **A. tormentor** is so colored.

On July 2, 1948, the writer and his associates collected a large number of mosquito larvae from temporary pools in Palmetto State Park, some 7 miles south of Luling, Texas. In one of the collecting jars there appeared a single bicolored larva which was conspicuous even to the unaided eye. Four collectors then returned to the pool from which the specimen was obtained and spent approximately an hour searching for additional specimens. The water was literally teeming with larvae of several species including **Psorophora howardii** Coquillet, **P. cyanescens** (Coq.), **P. longipalpus** Roth and **Aedes vexans** (Meigen). Only about twenty larvae of this type were collected, most of them being second and third instars.

Under the dissecting microscope it was noted that the thorax and the seventh and eighth abdominal segments were white, while the remainder of the body was very dark. The color was uniform for all specimens and all instars examined. Previously reported similar larvae differ somewhat from those collected by the writer. Larvae of **A. bimaculatus** were semi-transparent except for the head, the sixth and seventh abdominal segments (Ross 1943). Larvae of **A. tormentor** have been reported as being white on the thorax and the eighth abdominal segment only, while the remainder of the body was black (King, Bradley and McNeel, 1944).

Most of the larvae became fourth instars, but none pupated. Several permanent mounts of the fourth instars were made, and these retained their conspicuous color for several days, but gradually became more uniform as the mounting medium hardened. These larvae fit the description of the larva of **A. tormentor** as originally described by Dyar and Knab (1906), as well as subsequent more detailed descriptions, and it is believed that the larvae were indeed those of this species. However, since adults were not available for study, and in view of the limited knowledge concerning **A. tormentor,** this cannot be stated with certainty. At the present time **A. tormentor** can be distinguished from **A. atlanticus** Dyar and Knab only on the bases of larvae and male terminalia.

Larvae of **A. tormentor** are usually considered to be rare (Carpenter, Middlekauf and Chamberlain 1946). The species has been reported from the southeastern part of Texas (McGregor and Eads 1943), although collections indicate that the species is not common in this area. The writer has been

collecting mosquitoes in Texas for several years, and has collected several times from the same pool from which these bicolored larvae were obtained. Never before have larvae of this type been found. The present collections were made a few days after a heavy rain, and it seems probable that larvae of this species could be found only for a few days after temporary pools had been formed.

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A NEW CAPITOPHORUS APHID

GEORGE F. KNOWLTON
Utah State Agricultural College, Logan.

The following report includes the description of an apparently undescribed aphid of the genus **Capitophorus** from New Mexico, with notes on additional species.

Capitophorus stroudi n. sp.

A series of pale colored aphids, collected by Mr. Clyde F. Stroud at White Sands National Monument, New Mexico, were received for identification. The **Capitophorus** material proved of particular interest as it resembled several species of this aphid genus occuring on rabbitbrush, **Chrysothamnus**, with which the writer is acquainted. Mr. Stroud reported the host as "brush," either **Chrysothamnus nauseosus** var. **latisquameus** (A. Gray) or **Poliomintha incana** (Torr.) A. Gray, and I strongly suspect the former. The aphids were collected by sweepings.

Apterous vivipara: Body 2.35 to 2.45 mm. long, color evidently not dark; hairs on vertex flattened, approximately .033 to .041 mm. long; ocular tubercles poorly developed or absent; antennal tubercles moderately well developed, exceeding ends of hairs on vertex; antennae 3.11 to 3.2 mm. long, dusky to blackish beyond base of III; antennal III, .57 to .66 with 4 to 6 rounded sensoria on basal half; IV, .62 to .67 mm., longer than III; V, .54 to .57; VI, .11 to .12 plus .84 to .9 mm. long; rostral tip pointed but not needle-like; rostral IV+V, .015; cornicles almost cyclindrical but with slight enlargement toward distal end before flange and dusky to blackish beyond basal paler area; cauda total length .3 to .36 mm. long, paler than cornicles, with 3 or 4 lateral hairs on each side; anal plate dusky and rounded to somewhat angular at apex.

Alate vivipara: Body 2.13 mm. long; hairs on vertex flattened, particularly toward tip; width through eyes .52 mm.; ocular tubercles present; antennal tubercles moderately developed; antenne (broken) blackish beyond base of III with (21 or more) sensoria in crowded single row on third segment; hairs on antennae short, blunt to spear shape at end; rostrum pointed, IV+V .106 mm. long; hairs on sides of prothorax broadly flattened to funnel shape; abdomen armed with short flat to fan-shaped hairs on sides and dorsum, with pointed hairs on ventral surface; cornicles dusky to blackish, .5 mm. long, generally cylindrical with slight enlargement on inner surface before distal flange; cauda dusky, .35 mm. long with 3 or 4 hairs on each side.

Collections: Doubtless from **Chrysothamnus nauseosus** var. **latisquameus** in net sweepings at White Sands National Monument, Oteru County, New Mexico, on June 20, 1947 and August 4, 1947, by Clyde P. Stroud.

Taxonomy: Capitophorus stroudi n. sp. runs to the **Capitophorus gregarius, C. zerozoous** couplet in Knowlton and Smith's key (Canad. Ent., 68:107-108, 1936). From both these species it varies in lacking definite dorsal tubercles on the abdomen. It further differs from **C. gregarius** Knlt. in having paler body color, smaller body size, fewer and less conspicuous body hairs, and longer antennal III. In **C. stroudi,** antennal IV is longer than III, while the reverse is true in **G. gregarius** and **C. zerozoous** K.-S. **Capitophorus stroudi** keys to **Capitophorus wasatchii** Knlt. or **C. oestlundi** Knlt., from which species it differs in having fewer and less conspicuous body hairs; lacking the flattened hairs on dorsal surface of cauda possessed by **oestlundi,** and with less definitely cyclindrical cornicles than **wasatchii.**

Additional **Capitophorus** records at hand include the following:

Capitophorus brevinectarius G.-P. on **Artemisia,** Elk Springs, Colorado, June 25, 1937 (G. F. Knowlton, Det. M. A. Palmer).

C. brevipilosus (Baerg) on **Fragaria,** Knoxville, Tenn., August 4, 1924, (S. Marcovitch).

C. chlorophainus K.-S. on **Chrysothamnus nauseosus** at Cache La Poudre Canyon, Colorado, August 23; at Gould, Colorado, August 22; and Estes Park, Colorado, August 1940 (Knowlton). **Macrosiphum escalantii** K. also was collected with this species on **Chryso. viscidiflorus** at Linland, Colorado, August 19, 1935 (Knowlton).

C. decampus K.-S. on **Artemisia tridentata** at Sisters, Oregon, August 24, 1944 (Knowlton) and on sagebrush, Emery, Utah, August 4, 1932 (Knowlton).

C. elongatus K. on **Chrysothamnus parryi,** Orangeville, Utah, 1945, and Circleville, Utah, September 16, 1935 (Knowlton); on **C. nauseosus** at Oak Creek Canyon, Utah, July 10, 1942 (Knowlton).

C. glandulosus (Kalt.) on **Artemisia frigida,** Beaver Mt., Utah, July 10, 1942 (Knowlton); on **A. vulgaris,** Avon, Paradise, and Blacksmith Fork Canyon, Utah, August 5, 1937 (Knowlton); abundant on **A. frigida,** Teton Pass, Wyoming, July 20, 1946 (Knowlton); on **A. tridentata** at Flagstaff, Arizona, September 1944 (Knowlton); on **A. frigida** at Cameron Pass, Colorado, August 20, 1940 (Knowlton); at Pingree Park, Colorado, August 24, 1935 (Knowlton-A. C. Maxson); at Glendale, Utah, July 4, 1946 (Knowlton).

C. gregarius (K.) on **Chrysothamnus nauseosus nauseosus,** north of Rock

Candy Mountain, Sevier County, Utah, June 25, 1947 (Knowlton).

C. magnautensis K.-S. on **Chrysothamnus viscidiflorus** sub sp. **linifolius** at Duchesne, Utah, July 14, 1927 (Knowlton). Specimens collected on this host at Randlett, Utah, July 14, 1927 (Knowlton) were part of the paratype series studied. This locality record was omitted by error from the localities with the original description.

C. minor (Forbes) on strawberry at: Waldo, Florida, February 26, 1932 (A. N. Tissot); Pemberton, New Jersey, May 19, 1915 (N. B. Seamonell); Plant City, Florida, April 18, 1930 (C. F. Stahl); New York, June 6, 1914 (C. E. Olsen); Knoxville, Tennessee, May 2, 1916 (G. M. Bentley); Chadbourn, North Carolina, December 2, 1931 (L. B. Reed).

C. oestlundi Knlt. on **Chrysothamnus nauseosus nauseosus,** north of Rock Candy Mountain, Utah, June 25, 1947 (Knowlton); **C. nauseosus,** Du Bois, Idaho, July 19, 1946 (Knowlton); **Chrysothamnus,** Moses Lake, Washington, April 17, 1947; Winemucca, Nevada, July 24, 1944 (Knowlton); **C. nauseosus** at Elmo and south end of Flathead Lake, Montana, July 28, 1946 (Knowlton); Overton, Nevada, April 26, 1936 (Knowlton); Cache La Poudre Canyon, Colorado, August 23, 1940 (Knowlton); Elk Springs, Colorado, August 18, 1935 (Knowlton); Kanab, Utah, on **C. greeni,** August 10, 1936 (Knowlton-C. F. Smith); Wells and Snowwater Lake, Nevada, August 20, 1943 (Knowlton); Elco and Verdi, Nevada, July 23, 1944 (Knowlton).

C. potentillae (Walker) on wild rose, Union Gap, Washington, April 7 and 16, 1947; on **Potentillae** in greenhouse, Corvallis, Oregon (L. Weaver); on **Fragaria,** Sumas, Washington, August 25, 1947 (C. H. Johansen); Plant City, Florida, April 22, 1930 (C. F. Stahl); Walnut Creek, California, February 1, 1913 (W. M. D.); San Francisco, California (H. Morrison); Lacomb and Brookings, Oregon, November 15, 1933 (R. Dimick, Det. A. N. Tissot); Corvallis, Oregon, July 13, 1936 (L. Weaver); on rose at: Booneville Dam, Oregon; Logan, Weber Canyon, and Logan Canyon, Utah; Flagstaff, Arizona (Knowlton); and Shoshone Lake, Wyoming, September 11, 1941 (Knowlton-H. F. Thornley); Livingston, Montana, July 31, 1942 (Thornley).

C. quadritrichus K.-S. on **Artemisia tridentata** at Butlerville, Utah, June 15, 1937 (Knowlton); Logan Dry Canyon, Utah, June 18, 1944 (S. L. Wood).

C. ribis (L.) damaging red currant foliage at Lakepoint, Hyrum, and Farmington, Utah, 1947; **Ribis vulgaris,** Boston, Mass., July 8, 1921 (H. Morrison); Warrenton, Virginia, June 11, 1925 (Nelson Fell); Churchtown, Pa., June 11, 1901; Grand Rapids, Michigan, June 15, 1916; Essen, Prussia, Germany, July 8, 1898; Brussels, Belgium (S. H. Schouteden); District of Columbia, April 23, 1897; Providence, R. I., July 20, 1917 (G. M. Emerson); St. Paul, Minn. (A. C. Baker); Wooster, Ohio, July 16, 1920 (P. R. Lowry).

C. wasatchii Knlt. on **Chrysothamnus,** Moses Lake, Washington, April 17, 1947.

C. xantbii (Oest.) on cockleburr, Vineyard, Utah, July 31, 1937 Knowlton- L. L. Hansen); Logandale, Nevada, May 1947 (Knowlton).

C. xerozoous K.-S. on **Chrysothamnus greeni,** Fillmore, Utah, July 9, 1942 (Knowlton).

NEW AND LITTLE KNOWN NEOTROPICAL DORILAIDAE (Pipunculidae—Diptera)

D. ELMO HARDY
Ames, Iowa.

The material discussed in this paper has been received for study from The American Museum, the U. S. National Muesum, the Museum of Comparative Zoology, and Ohio State University. The writer is indebted to these institutions for having had the privilege of studying their Neotropical Dorilaidae.

Dorilas (Eudorylas) buscki (Malloch)
(Figs. 1a-c)

Pipunculus buseki Malloch, 1912, Smith, Misc. Coll., 60:3-4.

This species is characterized by its dark fumose wings, small third antennal segment, absence of abdominal fasciae and very long appendix of the cubital cell.

Male. Head: Eyes joined on the front for a distance slightly greater than the length of the frontal triangle. Front and face grayish brown. Occiput gray on sides and below, brownish on the upper portion. Labellum yellowish, palpi and antennae brown to blackish. Third antennal segment small and obtuse at the apex (fig. 1a). **Thorax:** Brown on the dorsum, gray on the sides. Propleura bare, dorsocentral hairs very minute; marginal scutellar hairs present but microscopic and inconspicuous. Humeri, tegulae and halteres brownish to black. **Legs:** Chiefly brown to black, bases of tibiae yellow. Femora moderately swollen, flexor spines present, although rather weak, on the first two pairs; hind femora with several pairs of flexor bristles near apices below. Middle femora each with a row of fine pale hairs on the outside near upper portion. Middle coxae each with a row of strong black bristles at apices above. Hind tibiae without strong erect bristles on the outerside. Pulvilli and tarsal claws about equal in length to the last subsegment of the tarsus. **Wings:** Rather dark brownish fumose, slightly lighter at the base and along hind margin. Stigma dark brown and filling all of the third costal section. Third section about one and one-half times longer than the fourth. The two sections combined are slightly longer than the fifth. Crossvein r-m located beyond the end of the subcostal vein and at the middle of the discal cell. Last section of the fourth vein gently curved. Last section of the fifth yein equal in length to the m crossvein. Petiole of cubital cell about three times longer than the r-m crossvein and nearly equal to the length of the last section of the fifth vein. **Abdomen**: Opaque brown to blackish, very faintly grayed on the sides and posterior angles of the segments. Sides slightly rounding, widest at about segment three. First tergum with a row of five to six strong black bristles on each side, abdomen otherwise clothed very sparsely with fine short hairs. Very small portions of the sixth and seventh terga are visible from a dorsal view. **Hypopygium:** About equal in length to the fifth abdominal segment, with a large apical membranous area on the right side and a small keel-like appendage in the middle

of the depressed area (fig. 1b). The coxopodite is brownish red in color and the harpagones are yellow brown. The latter appear, in the undissected specimen, to be broad, rather short and blunt at apices.

Length: body, 2.25-3.3 mm.; wings, 4.0-4.7 mm.

Malloch gave the length as 1½ mm. Mr. Green has checked the type and reported that this measurement was incorrect, the type is 2.25 mm.

Female. This is the first description of this sex. The front is much broader than the face, nearly two times wider at its greatest width. The front is opaque brownish except just above the antennae where it is grayish. The face is gray pubescent, brown in color. The third section of the costa about equal in length to the fourth. **Ovipositor:** base shining black, subelongate, with a strong tubercle below. Piercer long and slender, two times longer than the base (fig. 1c), and extending up between the legs to the front coxae.

Length: body, 3.2 mm.; wings, 4.5 mm.

Type locality: Taboga Island, Panama.

Specimens have been studied from Barro, Colorado, Canal Zone. July 13, 1924 (N. Banks) and Ft. Sherman, Panáma. July 3, 24 (N. Banks).

Dorilas (Eudorylas) interruptus (Malloch)
(Figs. 2a-b).

Pipunculus interruptus Malloch, 1912, Smith. Misc. Coll., 60:1-2.

This species is apparently related to **D. scotinus** (Collin) but the third antennal segment is more acute, the abdominal fasciae much narrower and the middle femora with a row of long conspicuous hairs along outer side.

Male. Head: Eyes joined for a distance slightly greater than the length of the frontal triangle. Front and face dull gray pubescent. Antennae dark brown to blackish, bristles of the under side of the second segment as long as the third segment. Third segment short acute to obtuse at apex, in the specimen at hand it is rounded below (fig. 2b), in the type it is very slightly pointed. **Thorax:** Chiefly brownish gray pollinose on the dorsum, gray on the sides. Propleura bare, marginal scutellar hairs weak. Humeri, tegulae and halteres dark brown to black. Metanotum with a transverse depressed area near the upper margin. **Legs:** Chiefly black, apices of femora and bases of tibiae yellow, tarsal subsegments brownish. Femora moderately stout, flexor spines present on all legs. Middle coxae each with a row of black bristles at apices above, middle femora each with a row of long black hairs posteriorly. Hind tibiae with two strong black bristles on the outside of the swollen portion. Tarsal claws and pulvilli are about equal in length to the last subsegment of the tarsus. **Wings:** Lightly fumose, stigma pale brown and filling all of the third costal section. Third section one and one-half times longer than the fourth and about three-fourths as long as the fifth section. The r-m crossvein is located just beyond the basal third of the discal cell. The last section of the fourth vein is rather strongly curved. The petiole of the cubital cell is about one-half as long as the last section of the fifth vein. **Abdomen:** Velvety opaque black, with narrow grayish white fasciae along the posterior margin of each tergum; these fasciae are interrupted by the black in the middle of the segment (fig. 2a). Abdomen

sparsely covered with short fine hairs, longer hairs on the sides. The sixth and seventh terga are visible from a dorsal view. **Hypopygium:** About half to three-fourths as long as the fifth abdominal segment, rather symmetrical in shape but with a large apical membranous area on the right side (fig. 2a). The harpogones are short, broad and blunt.

Length: body, 4.0-4.3 mm.; wings, 5.3 mm.

Malloch gave the length of the type as 2½ mm.

Female. The writer has not seen this sex. Malloch states that the upper two-thirds of the front is opaque brown and the lower third silvery. The third antennal segment is slightly more rounded at apex than in the male. The piercer of the ovipositor is longer than its black globose base and extends to slightly beyond the apex of the third abdominal segment.

Type locality: Taboga Island, Panama.

Type in U. S. National Museum.

The writer has studied a homotype from the type locality.

Dorilas (Eudorylas) longipilus n. sp.
(Figs. 3a-b)

This species is related to **D. peruensis** Hardy. It is distinguished by having the sides of abdominal segments two to four and all of the venter yellow; by the entirely yellow legs, humeri and halteres, the difference in the wing venation and the long hairs on the scutellum and abdomen.

Male. Head: Junction of the eyes equal in length to the frontal triangle. Front and face silvery pubescent, face broad, two times wider than the lower portion of the front. Occiput chiefly light gray pollinose. Mouthparts and third antennal segment bright yellow, first and second segments brown, Third antennal segment produced at apex into a very long bristle like projection, this is two and one-half times longer than the remainder of the segment and is equal to the arista (fig. 3a). Basal portion of aristae yellow, remainder black. **Thorax:** Chiefly black in ground color, brownish gray pollinose above, gray on the sides. Humeri, tegulae and halteres bright yellow. Propleura bare, dorsocentral hairs indistinct, marginal scutellar hairs very long and yellow, almost as long as the scutellum. Metascutellum not convex and with a transverse depression near the upper edge. **Legs:** Entirely yellow. Femora very slender, devoid of flexor spines except for a few small ones on the middle pair. All tibiae with rather strong apical spines below and with one or more strong, erect bristles on the outside of the swollen portion. Each tarsal subsegment rather strongly produced at apex above. Tarsal claws and pulvilli normal in size, scarcely longer than the last subsegment. **Wings:** Lightly fumose, stigma pale brown and filling all of the third costal section. Fourth costal section one and one half times longer than the third and almost equal in length to the fifth. Crossvein r-m situated at the basal one-fourth to one-fifth of the discal cell. Last section of the fourth vein very gently curved. **Abdomen:** Very slightly clavate from dorsal view, widest at segment five. Dorsum brown to black in ground color and brownish gray pollinose, terga two to four with a yellow spot on each side. Venter entirely yellow. First tergum with four or five very long,

yellow bristles on each side, these are longer than the first abdominal segment. Posterior portion of abdomen clothed with long yellow hairs, these are more abundant and longer on the sides. Seventh tergum scarcely visible from a dorsal view. **Hypopygium:** About three-fourths as long as the fifth abdominal segment, densely gray pubescent and yellow pilose and with a rather small apical membranous area (fig. 3b). The coxopodite and harpagones are bright yellow, the latter are broad and very short, in the undissected specimen, they appear to be as broad as long.

Length: body, 5.0 mm.; wings, 7-8 mm.

Female unknown.

Holotype male: Pichincha, Ecuador, Paramo of Cerro Pasochoa 3300 m., XI-12-1938 (F. Brown).

Type returned to the American Museum.

Dorilas (Cephalosphaera) mocaensis n. sp.
(Figs. 4a-b)

This species is most closely related to **D. (Cephalosphaera)**[1] **panamaensis** Hardy than to any other known neotropical species which have an appendiculate fourth vein in the wing. It is readily distinguished by the very long acuminate third antennal segment, the chiefly black femora, poorly developed pulvilli and tarsal claws and the dark brown to black, curved ovipositor. The front is also more broad and not narrowed above as in **panamaensis.**

Female. Head: Front, face and occiput silvery gray pubescent. Front as wide as the face and but very slightly narrowed above. Mouthparts and antennae bright yellow. The third antennal segment long acuminate below, the slender projected apex is three-fourths as long as the remainder of the third segment (fig. 4b). The basal portion of each arista is yellow. **Thorax:** Grayish brown on the dorsum, gray on the sides. Propleura each with a fan of long yellow hairs. Dorsocentral hairs distinct, although short. The scutellum has a row of rather strong bristles on its hind margin. The humeri and tegulae are yellow with a slight tinge of brown. The halteres are pale yellow. **Legs:** Coxae and femora chiefly dark brown to black, trochanters, tibiae and tarsi yellow. Extreme bases and apices of femora yellow, apical subsegments of tarsi brownish. Hind trochanters with numerous short yellow hairs below. Femora stout, flexor spines well developed. Tibiae without apical spurs or spines and with no large bristles on the outside of the swollen portion. Tarsal claws and pulvilli rather small, about equal in length to the last subsegment of tarsus. **Wings:** Hyaline, stigma light brown and filling all of the third costal section. Third section slightly longer than the fourth, the two combined are one and one-half longer than the fifth. Crossvein r-m located beyond the apex of the subcostal vein and at about the basal 3/7 of the discal cell. The ultimate section of the fourth vein (M_1) is one and three-fourths longer than the penultimate section (M_{1+2} beyond m crossvein). The appendix on the fourth vein reaches about one-third the

[1]The status of **Cephalosphaera** is being discussed in the writer's report of the Dorilaidae of the De Witte Expedition to the Belgian Congo.

distance to the wing margin. The last section of the fifth vein is longer than the m crossvein and the petiole of the cubital cell is slightly less than the length of the r-m crossvein. **Abdomen:** Sides straight or nearly so, very slightly widest at segments three to four. First tergum entirely gray, second tergum all gray except for narrow apical border of brown. Terga three and four brown, except for gray side spots. Fifth tergum chiefly gray, with narrow brown posterior and anterior margins and a median brown vitta. Sixth tergum gray, except for the brown anterior margin, the brown pollen extends into the gray for a short distance in the middle of the tergum. First tergum with a row of four to six short yellow bristles on each side, abdomen otherwise sparsely haired. Hind margin of sixth tergum not excised. **Ovipositor:** Base short, entirely black in color. Piercer thick and curved downward, dark reddish brown to blackish in color, slightly longer than its base and extending almost to the base of the second abdominal segment (fig 4a). A distinct suture is present just behind the vaginal orifice which separates the piercer from the base.

Length: body, 4.4 mm.; wings, 6.0 mm.

Male unknown.

Holotype female: Moca, Guatalon, 1,000 m. Mar.-Apr. 1931.

Type returned to the American Museum of Natural History.

Dorilas (Eudorylas) rex (Curran)
(Figs. 5a-e)

Pipunculus rex Curran, 1934, Bull. Amer. Mus. N. H., 66:416.

This species belongs in the atlanticus group and appears most closely related to **D. aquavicinus** Hardy. It is distinguished by the large apical membranous area of the male hypopygium; by the small third antennal segment; chiefly black femora and fumose wings.

Male. Head: The eyes are not distinctly separated and the junction is equal to the length of the frontal triangle. Front and face silvery gray pubescent. Occiput dark gray on sides and below, brownish on upper portion. Labellum yellowish, palpi and antennae blackish brown. Third antennal segment not much larger than the second and rounded below (fig. 5a). The type, figured by Curran, has the third antennal segment more porrect and is slightly smaller than that of the specimen at hand. **Thorax:** Black in ground color, brownish pollinose on the dorsum, gray on sides and anterior margin of mesonotum. Mesonotum and scutellum almost devoid of pile, the hind margin of the latter with scattered short hairs. Propleura bare. Humeri, tegulae and knobs of halteres blackish brown. **Legs:** Femora chiefly dark brown to black, apices and bases narrowly yellow. Trochanters, tibiae and tarsi brownish yellow. Curran described the legs of the type as black, knees narrowly reddish and tips of the tibiae and first two to three subsegments of anterior tarsi brownish red. The femora are slender, flexor bristles are present on the middle pair but absent on the front and hind femora. Tibiae without strong erect bristles on the outer surface or with apical spines. Tarsal claws and pulvilli small, not longer than the last subsegment of the tarsus. **Wings:** Lightly brownish fumose, stigma yellow brown and filling all of the third section of the costa. Third section slightly

longer than the fourth and almost as long as the fifth section. Crossvein r-m situated slightly below the basal third of the discal cell. Penultimate and ultimate sections of the fourth vein curved. Crossvein m equal in length to the last section of the fifth vein. Petiole of the cubital cell short, not longer than the r-m crossvein. **Abdomen:** Entirely opaque, with conspicuous silvery gray fascia on the posterior halves of segments two to five. The anterior margin of each of these segments is opaque brown, the brown color extends down the middle to the posterior border of the segment interrupting the gray fasciae. First tergum with a row of short black bristles on each side, other segments very sparsely haired. Sides of abdomen rounded, widest at segments three to four. **Hypopygium:** Seventh tergum large, well developed, occupying over one-fourth of the apex of abdomen from dorsal view. Eighth segment with a large apical membranous area slightly to the right side, this is half as broad as the segment (fig. 5c). The hypopygium, from above, is about equal in length to the fifth abdominal segment. The ninth segment (coxopodite) is yellow red in color, is greatly enlarged, from a lateral view it is larger than the eighth segment (fig. 5c). The sixth tergum is ventral in position and is more than half as long as the seventh. The outer harpago is very small and poorly developed, it is two times wider than long and about one-seventh as long as the strongly developed inner harpago. The inner is very greatly enlarged on apical half and curves up under the abdomen (figs. 5b).

Length: body, 4.5-5 mm.; wings, 5.5 mm.

Female unknown.

Type locality: Kortabo, British Guiana. Type in the American Museum.

The above described specimen was from Bartica, Br. Guiana, May 22, 1901 (H. S. Parish). It is in the Ohio State University Collection.

Dorilas rubidus n. sp.
(Figs. 6a-b)

This species is related to **D. willistoni** (Kert.), it is readily distinguished from **D. cressoni** (Johnson) by the bristle like apices of the antennae and the difference in wing and genital characters.

Female. Head: Front almost equal in width to the face and slightly expanded medianly. Front chiefly gray, the upper two-thirds more obscurely so than the lower portion, middle of front with a narrow shining black line extending from ocellar triangle three-fourths its length. Face silvery gray pubescent, occiput cinereous. Mouthparts and antennae, except aristae beyond swelling, bright yellow. Bristles of second segment yellowish, not well developed. Apex of third segment produced into a long slender projection, this apical portion is longer than the remainder of the third segment and is two-thirds as long as the aristae (fig. 6a). **Thorax:** Dorsal portion brown in ground color and brown pollinose, pleura yellow. The humeri, tegulae and halteres are yellow. The propleura are not visible on the specimen at hand and it is not known whether or not it is haired. The scutellum has very weak marginal hairs. **Legs:** Entirely yellow, femora slender with flexor spines developed only on the middle pair. Tibiae without apical

spines and with no strong bristles on their outer sides. Tarsal claws and pulvilli small, about equal in length to the last subsegment. **Wings:** Hyaline, stigmata light brown and filling all of the third costal section. Third section two times longer than the fourth and approximately equal in length to the fifth section. Crossvein r-m situated at the middle of the discal cell, last section of the fourth vein strongly curved. Ultimate section of the fifth vein about one and one-half times longer than the m crossvein. Crossvein m slightly bent in the middle. Petiole of cubital cell slightly longer than the r-m crossvein. **Abdomen:** Chiefly subshining bright yellow, thinly gray to brownish pollinose. Entire venter and first tergum yellow. Terga two to five yellow except for a median brown spot. Sixth tergum brown except for yellow lateral margins. Only two moderately strong, widely spaced bristles present on each side of the first tergum. Abdomen very sparsely haired, sides almost straight, just slightly widest at about segment three. Sixth tergum not excised on hind margin. **Ovipositor:** Base elongate and reddish brown in color. Piercer yellow red, curved inwardly, slightly longer than its base and extending to the apex of the second abdominal segment (fig. 6b).

Length: body, 4.0 mm.; wings, 5.3 mm.

Male unknown.

Holotype female: Brasilien Nova Teutonia 1936 (Fritz Plaumann).

Type returned to the American Museum.

Dorilas (Eudorylas) subjectus (Collin)
(Figs. 7a-b)

Pipunculus subjectus Collin, 1931, Konowia, X:171-173.

A female specimen is at hand which appears to belong to this species. There are a few discrepancies, however, between it and Collin's description of the male: there are no indications of apical spurs on the front tibiae, the subcostal vein (mediastinal of Collin) ends before the r-m crossvein and vein R_3 (Collins' radial vein) ends about opposite the end of the discal cell.

Female. Head: Front broad, expanded at about the middle, at its widest point the front is one and one-third times wider than the face. Face and front chiefly silvery pubescent, front with a shining black median line extending from ocellar triangle three-fourths the length of the front. Occiput

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EXPLANATION OF PLATES

Plate 1.

Fig. 1. **D. buscki** (Malloch). a. antenna; b. male hypopygium, dorsal; c. female ovipositor, lateral.

Fig. 2. **D. interruptus** (Malloch). a. male abdomen, dorsal; b. antenna.

Fig. 3. **D. longipilus** n. sp. a. antenna; b. male hypopygium, dorsal.

Fig. 4. **D. mocaensis** n. sp. a. female ovipositor, lateral; b. antenna.

Plate 2.

Fig. 5. **D. rex** (Curran). a. antenna; b. male harpagones; c. male abdomen, dorsal; d. male hypopygium, ventral; e. hypopygium from right side.

Fig. 6. **D. rubidus** n. sp. a. antenna; b. female ovipositor, lateral.

Fig. 7. **D. subjectus** (Collin). a. antenna; b. female abdomen, lateral.

PLATE I

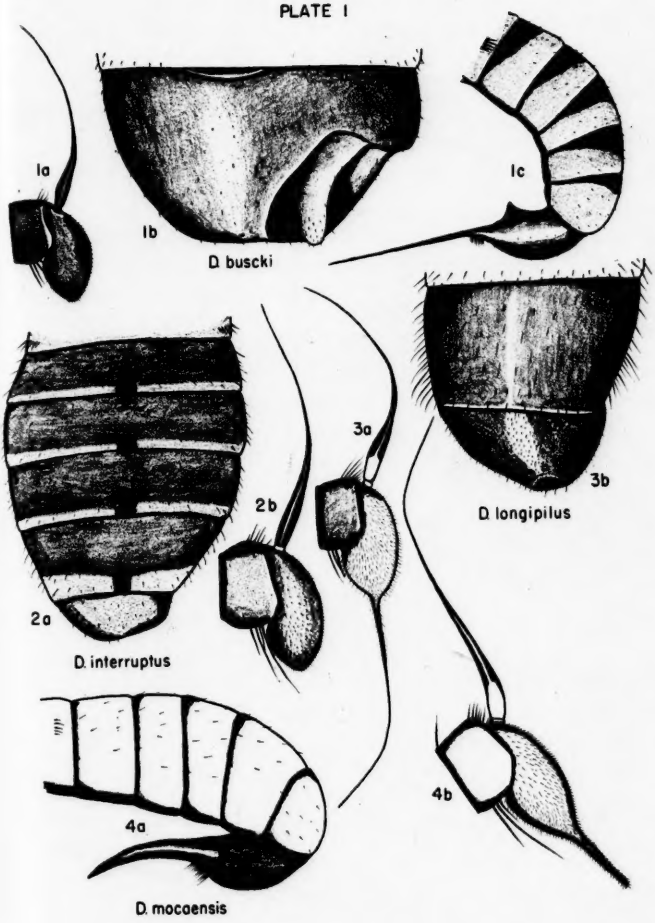
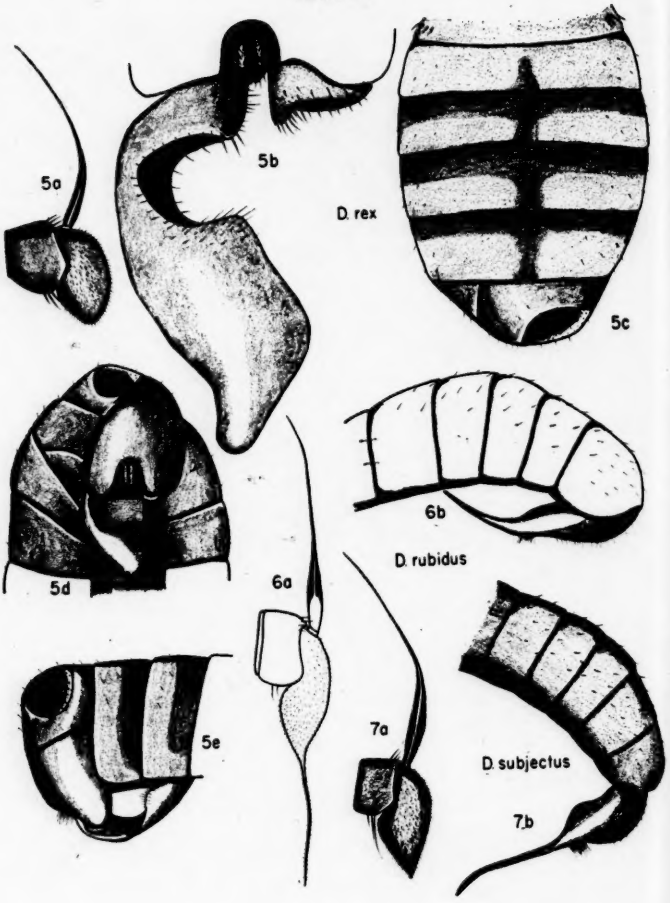

1a
1b
1c
D. buscki
2a
2b
3a
3b
D. interruptus
D. longipilus
4a
4b
D. mocoensis

PLATE 2



gray, brownish above. First two antennal segments dark brown to black, bristles of second segment moderately developed. Third segment reddish brown, acute at apex (fig. 7a). **Thorax:** Dorsum subshining black in ground color, gray dusted. Humeri black, tegulae yellow, halteres chiefly yellow with the knobs slightly brownish red. Propleura bare, dorsocentral and marginal scutellar hairs small and inconspicuous. **Legs:** Coxae, trochanters and femora chiefly dark brown to blackish, apices of femora yellow. Broad apices and bases of tibiae yellow, discolored with brown medianly. Tarsi chiefly yellow, last subsegment brownish. Femora moderately stout, flexor spines present but not strongly developed. No apparent apical spurs or strong lateral bristles on tibiae. Tarsal claws and pulvilli small, not much longer than the last subsegment. **Wings:** Hyaline, stigma light yellow brown, not quite filling all of the third costal section. Third section equal in length to the fourth, the two combined are slightly longer than the fifth section. The r-m crossvein is situated at about the basal three-sevenths of the discal cell and the last section of the fourth vein is almost straight. **Abdomen:** Short, rather rounded, widest at about segment three. Subshining black, lightly brownish pollinose on the dorsum, grayish on the sides. Abdomen very sparsely covered with short dark hairs. First tergum with two to three strong black bristles on each side. Hind margin of sixth tergum straight, not excised. **Ovipositor:** Base elongate, dark brown to black and grayish pollinose above. Piercer yellow red, long, slender and slightly curved upward (fig. 7b). The piercer is two times longer than its base and extends to the base of the abdomen.

Length: body, 3.2 mm.; wings, 4.0 mm.

Type locality: Bolivia, Villa Montes.

The female specimen described above was from Bolivia, Prov. Tara (Steinbach).

AN UNDESCRIBED ANOMIOPSYLLUS BAKER FROM THE PACK RAT, NEOTOMA MICROPUS BAIRD

R. H. EADS and G. C. MENZIES
Bureau of Laboratories
Texas State Department of Health, Austin, Texas.

A large series (Table 1) of an apparently undescribed flea of the genus **Anomiopsyllus** Baker has been taken in West Texas in sylvatic plague investigations conducted by the United States Public Health Service and the Texas State Department of Health. This unusual genus has no eyes, both genal and pronotal combs are absent and the number of setae are greatly reduced.

Anomiopsyllus hiemalis, n. sp.

Holotype male: Clypeus evenly rounded, frontal tubercle prominent, well sclerotized; four-segmented labial palpi extend slightly beyond fore coxae; preantennal region with inconspicous row of three bristles (middle one

small) and single small bristle on margin of antennal fossa; scape of antenna with three setae, pedicle with four setae which extend less than one-fourth the length of the clava; postantennal region of head glabrous with exception of one large and one small bristle on margin of antennal fossa and a row of four bristles on posterior margin; pro-, meso-, and metathorax each with one row of three or four fine bristles; each abdominal tergite with three or four bristles in a single row, first tergite with an additional row of three prominent teeth on caudal margin (two in some paratypes), second tergite with one caudal tooth; single antepygidial bristle per side; abdominal sternites with one or two bristles; last tarsal segment of legs with four lateral plantar bristles, each femur with one lateral bristle: second tarsal segment of third pair of legs with two setae as long as last three tarsal segments. **Modified Segments:** VIII sternite without distal process, one large bristle toward ventro-caudal margin; IX sternite (Fig. 4) with a distal arm not well defined into lobes, at apex a row of three spiniforms, approximately twenty bristles scattered over posterior two-thirds of arm; immovable process of clasper (Fig. 5) with single acetabular bristle at base, at apex a stout bristle and seven or eight smaller ones; movable finger of clasper (Fig. 5) broad and conical, with three spiniforms toward posterior border, the middle one somewhat closer to dorsal spiniform, toward apex numerous small bristles present, four bristles on posterior border between the second and third spiniforms; hairs on pygidium reduced in number and very long.

Allotype female: General chaetotaxy similar to male in most respects; bristles of pedicle of antenna reach over one half length of clava; first abdominal tergite with only two teeth on posterior margin and none on second abdominal tergite. **Modified Segments:** VII sternite (Fig. 2) with posterior margin divided into two lobes by a shallow sinus; spermatheca with body roughly globular and with slightly curved arm larger than body; anal style (Fig. 1) about three times as long as width at base, a long bristle and two very short ones at apex.

Type locality: Gaines County, Texas.

Type host: **Neotoma micropus** Baird

Types: Holotype male collected by V. I. Miles, April 23, 1948. Allotype female by same collector, April 9, 1948.

Paratypes: Two males from Lamb County, Texas, by V. I. Miles, Nov. 22, 1947; two males from Terry County, Texas, by V. I. Miles, Jan. 6, 1948; two males and three females from Yoakum County, Texas, by G. H. Halyard, Aug. 14, 1947; two females from Dawson County, Texas, September 23, 1947 and one female October 3, 1947, by G. H. Halyard.

The holotype and allotype have been deposited in the United States National Museum, Washington, D. C. Paratypes have been sent to the Communicable Disease Center, Public Health Service, Atlanta, Georgia; Mr. Frank M. Prince, Plague Suppressive Laboratory, Public Health Service, San Francisco, California; Dr. William L. Jellison, Rocky Mountain Laboratory, Public Health Service, Hamilton, Montana; and Major Robert Traub, Medical Center, Washington, D. C.

This species appears to be most closely related to **Anomiopsyllus nudatus** Baker. In **A. nudatus** the two dorsally placed spiniforms of the movable finger of the male clasper are adjacent to one another; in **A. hiemalis** the middle spiniform is spaced more nearly equidistant between the dorsal and ventral spiniforms.

In addition to the type host, **A. hiemalis** has occasionally been taken from **Onychomys leucogaster** (Coues), grasshopper mouse; **Dipodomys ordii** Woodhouse, kangaroo rat; and **Sylvilagus auduboni** (Baird), cottontail rabbit.

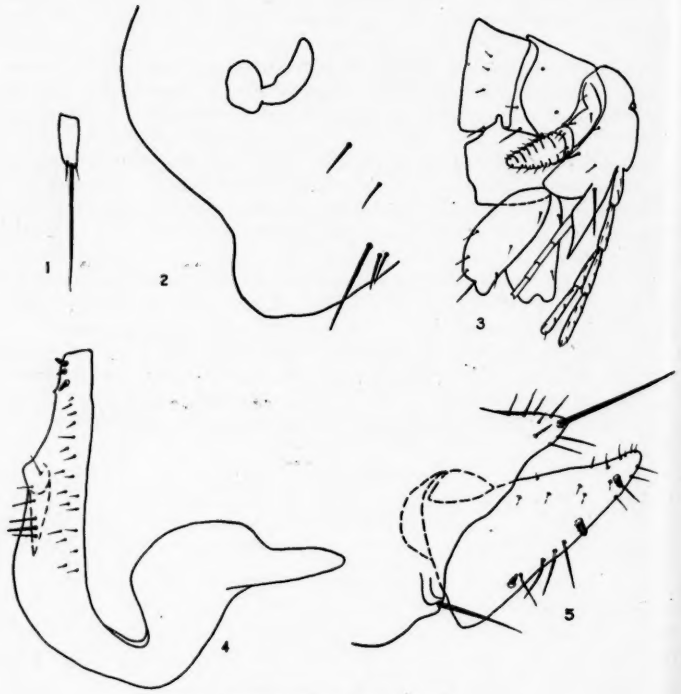
Data on twelve-month's collections of **Neotoma** and the numbers of **A. hiemalis** taken from them are given in Table 1. A total of 2,126 packrats were taken; 371 were infested with **A. hiemalis**, with an average of 3.44 fleas per infested animal.

In addition to trapping the pack rats, nine of their nests were examined. Only six **Anomiopsyllus** were taken although the common **Neotoma** flea, **Orchopeas sexdentatus** Baker, was present in greater numbers. **Echidnophaga gallinacea** Westwood and **Hoplopsyllus affinis** Baker were also recovered from the nests.

Mr. F. M. Prince, Plague Suppressive Laboratory, Public Health Service and Major Robert Traub, Army Medical School, Washington, D. C., were very helpful in determining the specific status of this flea. Mr. Prince loaned a drawing made by the late Dr. Alfonso Dampf of an **Anomiopsyllus** which he had taken in Mexico near the Texas border. It was not unlike the form described here as **A. hiemalis**. As far as we have been able to determine, Dr. Dampf had not published a description of his Mexican form.

Table 1

Date	Number of **Neotoma** Taken	Number of **Neotoma** with **A. hiemalis**	Number of **A. hiemalis**	Fleas per Infested Rat	Percent of Infested Animals
August 1947	68	6	12	2	9
September	45	7	15	2.14	16
October	114	14	53	3.78	12
November	35	5	22	4.5	14
December	31	2	3	1.5	6
January 1948	55	10	82	8.2	18
February	186	21	52	2.47	11
March	253	56	360	6.42	22
April	398	144	492	4.11	36
May	280	73	131	1.79	26
June	285	18	40	2.21	6
July	376	15	15	1	4
Total	2,126	371	1,277	3.44	12.7



EXPLANATION OF PLATE

Anomiopsyllus hiemalis n. sp.: Fig. 1. female anal stylet; Fig. 2. female seventh sternite; Fig. 3 male head; Fig. 4. male IX sternite; Fig. 5. process and movable finger of male clasper.

TWO NEW SPECIES OF MALLOPHAGA

K. C. EMERSON
Oklahoma A. and M. College, Stillwater, Oklahoma.

Lagopoecus obscurus n. sp.
(Figures 1-3)

Female. Clypeal margin evenly rounded, and with scattered small setae. Eye prominent, with a long seta arising from the dorsal surface. Temples convexly rounded, each with two long setae; cephalic margin without setae. Prothorax short, wide, and armed dorsally with one long seta on each posterolateral angle. Pterothorax twice as wide as long. Dorsal posterior pterothoracic setae as shown in figure 1. Abdominal segments with brown areas on lateral margins as shown in figure 1. Abdominal tergal plates each with four long median setae, one or two pairs of long setae on the posterolateral angles, and on segments two to six, one pair of long setae medial to the dark areas. Chaetotaxy of the posterior segments as shown in figure 1.

Male. Head approximately the same size as in the female. Thorax and abdomen essentially the same shape, as in the female, but smaller. Chaetotaxy, except for the posterior abdominal segments, same as in the female. Genitalia as shown in figure 3.

Type Host: Dendragapus obscurus richardsonii (Douglas), Richardson's Grouse.

Type Material: Holotype male and allotype female, collected by Dr. William L. Jellison, from the Tin Cup District, Ravalli Co., Montana. Paratypes from the same collection and from the type host collected in the Harlan District, Ravalli Co., Montana.

Discussion: This form is very closely related to **L. lyrurus** Clay, from **Lyrurus tetrix tetrix** and **L. gibsoni** Hopkins, from **Centrocercus urophasianus.** Both of the above-mentioned species have six long median setae on each abdominal tergal plate and two pairs of long setae on the posterolateral angles on each abdominal tergal plate and three pairs of long setae on the posterolateral angles of the pterothorax.

Colinicola mearnsi n. sp.
(Figures 4-6)

Female: Head circumfasciate with clypeal margin evenly rounded. Trabeculae well developed. Antennae filiform, the second segments being the longest. Temples rounded but not expanded or produced. Prothorax short, with one long dorsal seta in each posterolateral angle. Pterothorax longer than prothorax, widest at the posterior margin. Abdomen oval. Tergal plates prominent, separated medianly, and each with a row of setae on the posterior margin. Dorsal and ventral chaetotaxy as shown in figure 4.

Male: Similar to the female in size and shape, there being little sexual dimorphism. First antennal segments enlarged but without appendages; second segments each with a slight hook on the distal end; third segments prominently curved, fourth segments produced at angles. Chaetotaxy as shown in figure 5. Genitalia very unusual, as shown in figure 6.

Type Host: Cyrtonyx montezumae mearnsi Nelson, Mearns's Quail.

Type Material: Holotype male, allotype female, and paratypes of both sexes, collected by Dr. A. R. Phillips at Nogales, Arizona.

Discussion: This species differs from the generic description given by Carriker in that the pterothorax is longer than the prothorax and the male genitalia are entirely different. The male genitalia (figure 7) of **Colinicola numidianus** (Denny), genotype, are typical for the genus. Figures 6 and 7 illustrate the greatest difference between the new form and the other species in the genus. Although this form does not agree entirely with Carriker's description of the genus, it is believed that it is properly placed.

EXPLANATION OF PLATES

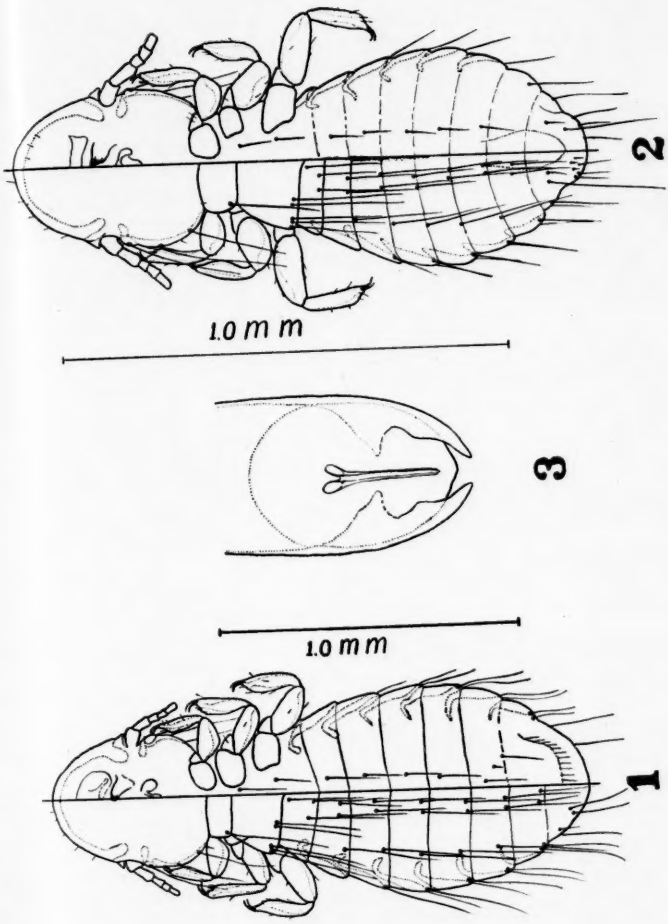
Plate I

All figures refer to **Lagopoecus obscurus** n. sp.:

1. Dorsal-ventral view of the female.
2. Dorsal-ventral view of the male.
3. Male genitalia.

Plate II

4. Dorsal-ventral view of the female of **Colinicola mearnsi** n. sp.
5. Dorsal-ventral view of the male of **Colinicola mearnsi** n. sp.
6. Male genitalia of **Colinicola mearnsi** n. sp.
7. Male genitalia of **Colinicola numidianus** (Denny).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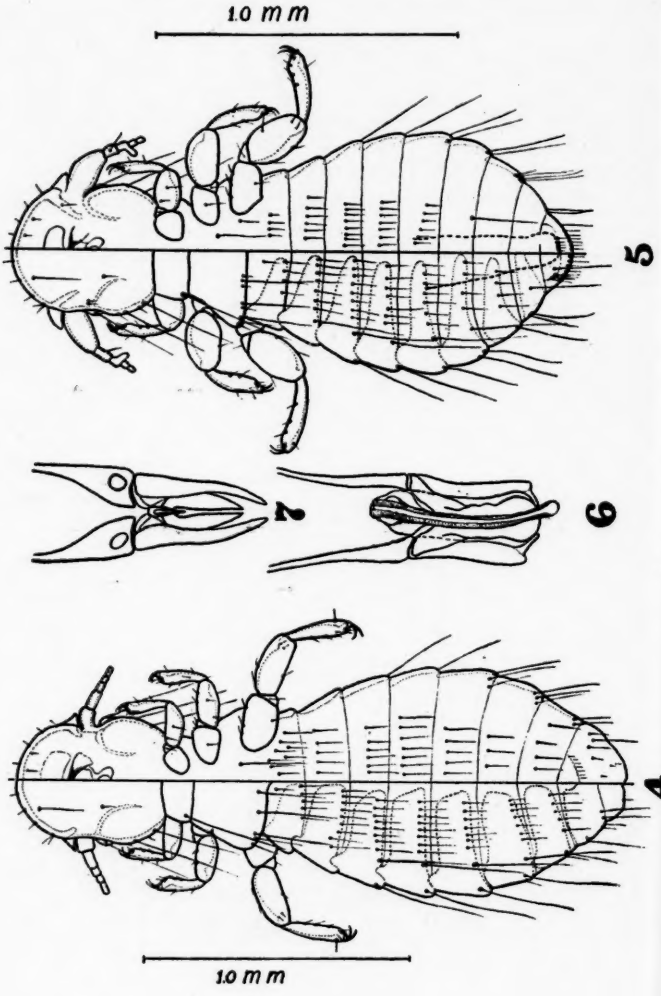
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THE EGGS OF CORIXIDAE (HEMIPTERA)

By H. B. HUNGERFORD*
Lawrence, Kansas

In "The Corixidae of the Western Hemisphere"[1] on page 17 I stated that I could not accept the proposal to make the subfamily Micronectinae a separate family, Micronectidae, until I had seen the eggs of **Tenagobia** which undoubtedly is a genus belonging in the Micronectinae. **Tenagobia** occurs in the western hemisphere and is the counterpart of the **Micronecta** of the old world. In text figure 1 on page 13 of the above work I reproduced Doctor Poisson's drawings of the eggs of two species of **Micronecta**. These are indeed very different from other corixid eggs in shape. They are attached flatwise along their longitudinal axis and lack a stalked pad. At that time I had no information about **Tenagobia** eggs.

After "The Corixidae of the Western Hemisphere" had gone to press, we discovered that the eggs in dried and pinned gravid females were in good condition for study. By dropping an abdomen containing fully developed eggs into hot caustic potash for a brief period (one minute or less depending on the size of the insect), it was possible to restore them to their normal size and appearance. After drawings and measurements were made, the eggs were thoroughly washed in water and mounted directly from it into highly concentrated polyvenyl alcohol. In this manner we were able to study the eggs of 30 species of Corixidae in 19 different genera, including **Tenagobia.**

The eggs of **Tenagobia,** unlike those of **Micronecta,** are attached to their support by means of a long, slender stalk such as is possessed by **Cymatia.** In view of this, a family rank for the Micronectinae seems inadmissable.

In several instances the eggs were found in the genital chamber. From the position there, the eggs apparently leave the body of the female stalk end first and are then glued to submerged objects. Brief descriptions of the eggs examined follow.

1. **Tenagobia selecta** (White). Total length of egg (including stalk) .86 mm.; length of micropyle .04 mm.; length of stalk .36 mm.; diameter of egg .32 mm. The eggs are a greyish yellow in color, without apparent sculpturing. (All eggs herein described are numbered according to their order on the plates. For **T. selecta,** see Plate I, fig. 1).

2. **Stenocorixa protrusa** Horvath. Total length of egg 1.15 mm.; length of micropyle .03 mm.; length of stalk .09 mm.; diameter of egg .58 mm. While in most of the other eggs studied, the stalk and egg seem to be distinct from one another, the egg of **S. protrusa** is firmly united with the stalk with no apparent line of division. The eggs are a deep golden brown, much darker than the other eggs studied, and the surface is minutely punctate or sculptured.

3. **Cymatia americana** Hussey. Total length 1.41 mm.; length of micropyle

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* Contribution from the Department of Entomology, University of Kansas.

1 University of Kansas Science Bulletin, Vol. XXXII.

.03 mm.; length of stalk .79 mm.; diameter .60 mm. Color pale yellowish tan with no sculpturing.

4. **Heterocorixa chapadiensis** Hungerford. Total length 1.01+ mm.; length of micropyle .01 mm.; length of stalk (broken) .32+ mm.; diameter .46 mm. Color pale yellowish tan, no sculpturing; stalk clear. Shape elongate oval.

5. **Heterocorixa hesperia venezuelana** Hungerford. Total length 1.34 mm.; length of micropyle .01 mm.; length of stalk .72 mm.; diameter .56 mm. Color pale yellowish tan; not sculptured; shape rounded.

6. **Dasycorixa rawsoni** Hungerford. Total length 1.15 mm.; length of micropyle .12 mm.; length of stalk .10 mm.; diameter .84 mm. Color golden brown; finely sculptured; shape elongate oval.

7. **Graptocorixa melanogaster** (Kirkaldy). Total length 1.27 mm.; length of micropyle .12 mm.; length of stalk .04 mm.; diameter .85 mm. Color pale yellowish tan; shape oval; not sculptured.

8. **Graptocorixa abdominalis** (Say). Total length 1.30 mm.; length of micropyle .12 mm.; length of stalk .04 mm.; diameter .98 mm. Color pale yellow; shape oval; not sculptured.

9. **Graptocorixa serrulata** (Uhler). Total length .69 mm.; length of micropyle .06 mm.; length of stalk .03 mm.; diameter .49 mm. Color pale yellow; shape oval; not sculptured.

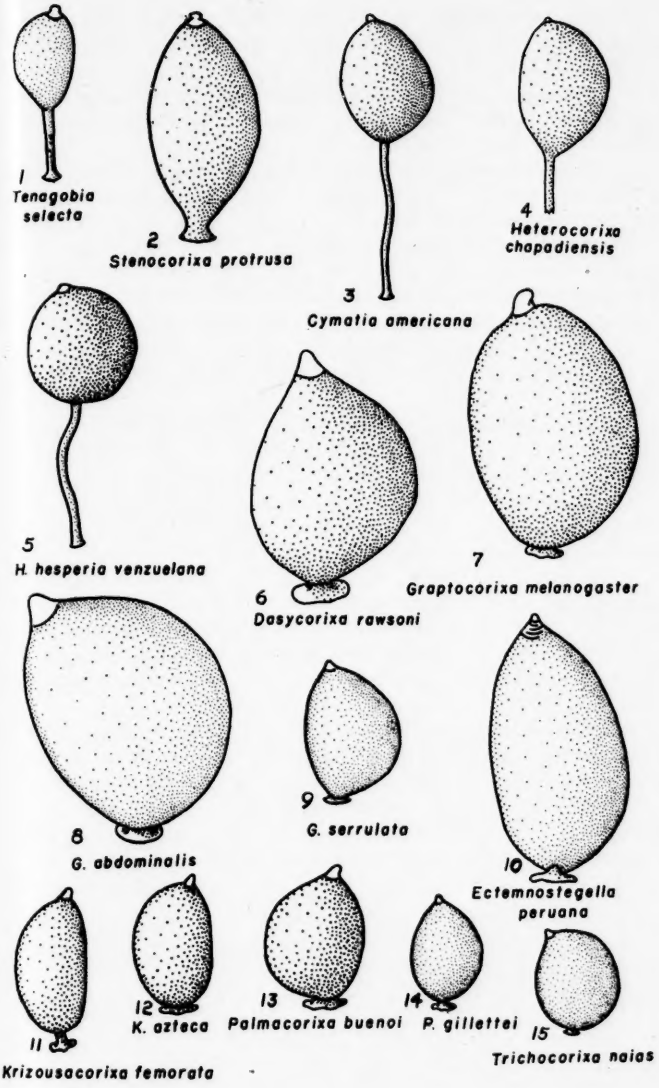
10. **Ectemnostegella peruana** Jaczewski. Total length 1.22 mm.; length of micropyle .09 mm.; length of stalk .07 mm.; diameter .58 mm. Color pale yellow; shape elongate oval; not sculptured.

11. **Krizousacorixa femorata** (Guérin-Ménéville). Total length .86 mm.; length of micropyle .06 mm.; length of stalk .09 mm.; diameter .36 mm. Color yellowish tan; shape elongate oval; surface minutely pitted or sculptured.

12. **Krizousacorixa azteca** Jaczewski. Total length .65 mm.; length of micropyle .06 mm.; length of stalk .03 mm.; diameter .40 mm. Color yellowish tan; shape elongate oval; surface minutely punctate. The eggs of **K. azteca** have shorter stalks than do those of **K. femorata**, and are somewhat broader in proportion to their length.

PLATE I.

1. **Tenagobia selecta** (White).
2. **Stenocorixa protrusa** Horvath.
3. **Cymatia americana** Hussey.
4. **Heterocorixa chapadiensis** Hungerford (stalk broken).
5. **Heterocorixa hesperia venezuelana** Hungerford.
6. **Dasycorixa rawsoni** Hungerford.
7. **Graptocorixa melanogaster** (Kirkaldy).
8. **Graptocorixa abdominalis** (Say).
9. **Graptocorixa serrulata** (Uhler).
10. **Ectemnostegella peruana** Jaczewski.
11. **Krizousacorixa femorata** (Guérin-Ménéville).
12. **Krizousacorixa azteca** Jaczewski.
13. **Palmacorixa buenoi** Abbott.
14. **Palmacorixa gillettei** Abbott.
15. **Trichocorixa naias** (Kirkaldy).


1
Tenagobia selecta
2
Stenocorixa protrusa
3
Cymatia americana
4
Heterocorixa chapadiensis
5
H. hesperia venzuelana
6
Dasycorixa rawsoni
7
Graptocorixa melanogaster
8
G. abdominalis
9
G. serrulata
10
Ectemnostegella peruana
11
Krizousacorixa femorata
12
K. azteca
13
Palmacorixa buenoi
14
P. gillettei
15
Trichocorixa naias

13. **Palmacorixa buenoi** Abbot. Total length .72 mm.; length of micropyle .07 mm.; length of stalk .04 mm.; diameter .49 mm. Color pale, clear yellow; shape elongate oval; not sculptured.

14. **Palmacorixa gillettei** Abbott. Total length .57 mm.; length of micropyle .03 mm.; length of stalk .04 mm.; diameter .37 mm. Color pale yellow; shape oval; not sculptured.

15. **Trichocorixa naias** (Kirkaldy). Total length .50 mm.; length of micropyle .04 mm.; length of stalk .03 mm.; diameter .42 mm. Color pale yellow; shape oval; not sculptured.

16. **Corisella decolor** (Uhler) [=**dispersa** (Uhler)]. Total length .74 mm.; length of micropyle .07 mm.; length of stalk .07 mm.; diameter .43 mm. Color pale yellow; shape oval; stalk short and stout; not sculptured.

17. **Corisella edulis** (Champion). Total length 1.27 mm.; length micropyle .12 mm.; length of stalk .07 mm.; diameter .72 mm. Color pale yellowish tan; shape elongate oval; stalk more slender than in **C. decolor**; not sculptured.

18. **Centrocorisa kollarii** (Fieber). Total length of egg .98 mm.; length of micropyle .04 mm.; length of stalk .07 mm.; diameter .68 mm. Color yellowish tan; shape oval; not sculptured.

19. **Pseudocorixa beameri** (Hungerford). Total length 1.01 mm.; length of micropyle .10 mm.; length of stalk .09 mm.; diameter .68 mm. Color yellowish tan; shape oval; not sculptured.

20. **Callicorixa noorvikensis** Hungerford. Total length .88 mm.; length of micropyle .06 mm.; length of stalk .07 mm.; diameter .58 mm. Color pale yellow, shape elongate oval; sculptured in hexagonal mosaics.

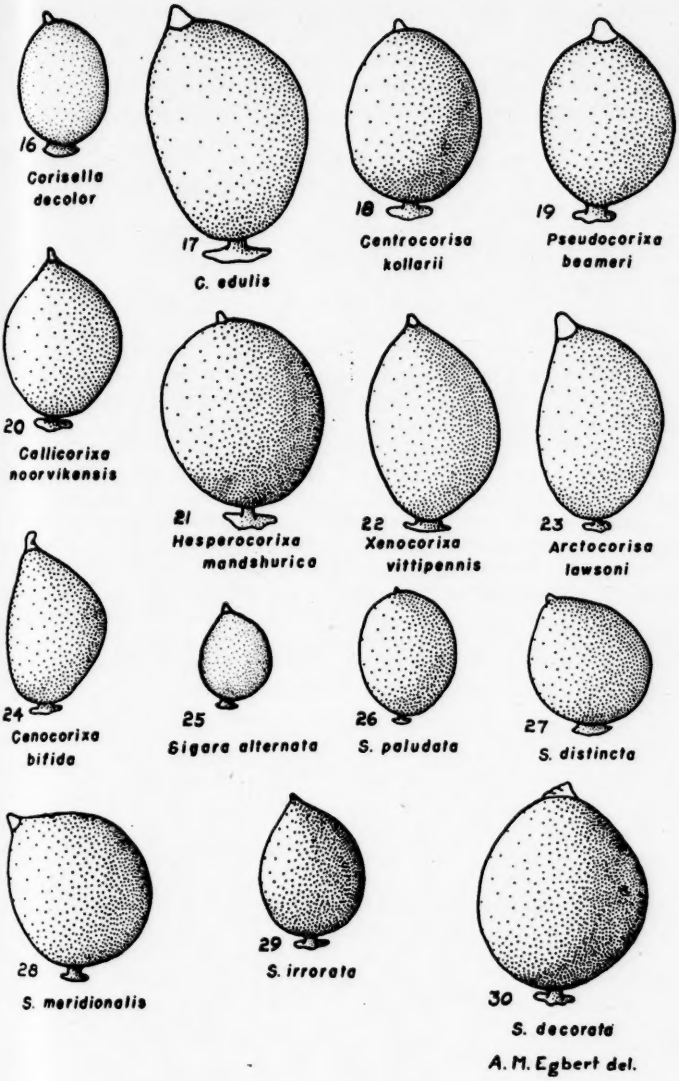
21. **Hesperocorixa mandshurica** (Jaczewski). Total length 1.05 mm.; length of micropyle .06 mm.; length of stalk .07 mm.; diameter .71 mm. Color pale yellow; shape round; not sculptured.

22. **Xenocorixa vittipennis** (Horvath). Total length 1.01 mm.; length of micropyle .04 mm.; length of stalk .04 mm.; diameter .49 mm. Color pale yellowish tan; shape elongate oval; surface minutely wrinkled.

23. **Arctocorisa lawsoni** Hungerford. Total length .92 mm.; length of micropyle .09 mm.; length of stalk .04 mm.; diameter .65 mm. Color pale yellowish tan; shape elongate oval; not sculptured.

PLATE II.

16. **Corisella decolor** (Uhler) [=**dispersa** (Uhler)].
17. **Corisella edulis** (Champion).
18. **Centrocorisa kollarii** (Fieber).
19. **Pseudocorixa beameri** (Hungerford).
20. **Callicorixa noorvikensis** Hungerford.
21. **Hesperocorixa mandshurica** (Jaczewski).
22. **Xenocorixa vittipennis** (Horvath).
23. **Arctocorisa lawsoni** Hungerford.
24. **Cenocorixa bifida** (Hungerford).
25. **Sigara (Vermicorixa) alternata** (Say).
26. **Sigara (Phaeosigara) paludata** Hungerford.
27. **Sigara (Subsigara) distincta** (Fieber).
28. **Sigara (Tropocorixa) meridionalis** (Wallengren).
29. **Sigara (Tropocorixa) irrorata** (Fieber).
30. **Sigara (Allosigara) decorata** (Abbott).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Corisella decolor
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C. edulis
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Centrocorisa kollarii
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Pseudocorixa beameri
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Callicorixa noorvikensis
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Hesperocorixa mandshurica
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Xenocorixa vittipennis
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Arctocorisa lawsoni
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Cenocorixa bifida
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Sigara alternata
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S. paludata
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S. distincta
28
S. meridionalis
29
S. irrorata
30
S. decorata
A. M. Egbert del.

24. **Cenocorixa bifida** (Hungerford). Total length .89 mm.; length of micropyle .07 mm.; length of stalk .03 mm.; diameter .50 mm. Color pale yellow; shape elongate oval; not sculptured.

25. **Sigara (Vermicorixa) alternata** (Say). Total length .55 mm.; length of micropyle .04 mm.; length of stalk .04 mm.; diameter .35 mm. Color pale yellow; shape oval; not sculptured.

26. **Sigara (Phaeosigara) paludata** Hungerford. Total length .65 mm.; length of micropyle .01 mm.; length of stalk .03 mm.; diameter .50 mm. Color pale yellow; shape rounded; surface minutely wrinkled.

27. **Sigara (Subsigara) distincta** (Fieber). Total length .68 mm.; length of micropyle .01 mm.; length of stalk .03 mm.; diameter .60 mm. Color yellowish tan; shape oval; not sculptured.

28. **Sigara (Tropocorixa) meridionalis** (Wallengren). Total length .86 mm.; length of micropyle .08 mm.; length of stalk .07 mm.; diameter .72 mm. Color pale yellowish tan; shape oval; surface minutely wrinkled.

29. **Sigara (Tropocorixa) irrorata** (Fieber). Total length .75 mm.; length of micropyle .03 mm.; length of stalk .06 mm.; diameter .50 mm. Color pale yellowish tan; shape elongate oval; surface minutely wrinkled.

30. **Sigara (Allosigara) decorata** (Abbott). Total length .96 mm.; length of micropyle .07 mm.; length of stalk .07 mm.; diameter .86 mm. Color pale yellowish tan; shape rounded; not sculptured.

Summary: From what little we now know about the eggs of Corixidae, those of **Micronecta** are unique and do not follow the usual corixid pattern, while those of **Tenagobia** are on elongated stalks and are shaped like those of **Cymatia, Heterocorixa** and **Agraptocorixa.** However different the eggs of **Tenagobia** are from those of **Micronecta,** these two genera are structurally so much alike that they must belong in the same subfamily. The Micronectinae should therefore be retained as a subfamily of Corixidae until more convincing evidence is presented than we have at present.

APHIDS FROM THE WEST

GEORGE F. KNOWLTON

Utah State Agricultural College, Logan.

The following host and distribution records deal with aphids, many of which are incompletely known in most western states.

Pterocomma populea (Kalt.), accidental alate on potato, Toppenish, Washington, May 28, 1947; Twin Falls, Idaho; Mt. Nebo, Utah, July 12, 1942 (Knowlton).

Clavigerus beulahensis (Ckl.) on **Populus**, Big Cottonwood Canyon, Utah., June 25, 1925; Bear River City, Utah, May 13, 1930 (Knowlton).

C. **bicolor** (Oest.) on **Salix**, Cedar Breaks, Utah, at 10,500 ft. elevation, July 8, 1925 (Knowlton); accidental alate on apricot, Union Gap, Washington, November 7, 1947; Twin Falls, Idaho, on weeping willow, June 19, 1941, (J. R. Douglass).

C. **populifoliae** (Fitch) on **Populus**, Morgan and Hyde Park, Utah, June, 1925 (Knowlton); Beaverdam, Arizona, April 25, 1935 (Knowlton); accidental alate on **Salix** at Union Gap, Washington, November 7, 1947.

C. **salicis** (L.) on **Salix** at Auburn, Washington, August 6, 1937 (H. C. Bennion).

C. **smithiae** (Monell) on **Populus**, Manhattan, Montana, August 14, 1926 (C. B. Phillip); **Salix**, Union Gap, Washington, November 7, 1947; damaging weeping willow at Twin Falls, Idaho, June 19, 1941 (J. R. Douglass); **Populus angustifolia**, Mt. Nebro, Utah, July 12, 1942 (Knowlton).

Aphis artemisicola Wms. on **Artemisia tridentata**, Cameron Pass, Colorado, August 22, 1940 (Knowlton).

A. bakeri Cowen on peach and apricot, Union Gap, Washington, September and November, 1947.

A. canae Wms. on **Artemisia tridentata**, Yellowstone National Park, Montana, July 15, 1936 (Knowlton).

A. corbocolor Gill. on **Rumex crispus**, Cornish, Utah, June 27, 1935 (Knowlton—C. F. Smith); **Rumex**, St. Mary's Lake, Montana and Jackson, Wyoming, July, 1946 (Knowlton); Union Gap, Washington, July 8, 1947.

A. cardui L., an accidental alate on gooseberry, Farmington, Utah, September 17, 1941 (Knowlton—W. D. Fronk); **Carduus**, Afton, Wyoming, July 20, 1946 (Knowlton); prune and apricot, Union Gap, Washington, November 7, 1947.

A. cerasifoliae Fitch in twisting leaves of **Prunus melanocarpa**, Spanish Fork Canyon and Soldier Summit, Utah, June 9, 1946 (Knowlton).

A. chrysothani Wilson on **Chrysothamnus**, Hubbard Ranch, Nevada, August 20, 1943 (Knowlton); on **C. nauseosus** at Hooper, Honeyville and Ogden, Utah.

A. frangulae Kalt. on **Nepeta cataria**, Wells, Nevada, August 20, 1943 (Knowlton); Beaver Mt., Utah, July 10, 1942; Twin Falls, Idaho, August 19, 1943 and Whipple, Arizona, May 6, 1945 (Knowlton).

A. gossypii Glover on cantaloupe and **Rumex crispus**, Glendale, Nevada, April 25, 1941 (Knowlton); damaging watermelons, Toquerville, Moab and

Castle Valley, Utah; **Capsella bursa-pastoris**, Beaver Dam, Arizona, May 25, 1935 (Knowlton); accidental on **Rosa**, Bonneville Dam, Oregon, July 20, 1939 (Knowlton).

A. gregalis K. on **Chrysothamnus viscidiflorus lanceolatus**, Hansels' Mts., Utah., August, 1945 (Knowlton); Tabiona, Utah, September 2, 1937 (Knowlton).

A. helianthi Monell on **Helianthus annuus**, Shoshone, Wyoming, September 13, 1941 (Knowlton—H. F. Thornley); in stomach of a lizard, **Uta stansburiana stansburiana** (B.-G.), at Gusher, Utah, August 5, 1932; Wells, Nevada, August 16, 1945, and Great Falls, Montana, August 4, 1944 (Knowlton); Hurrah, Washington, July 9, 1947.

A. lugentis Wms. on sneezeweed, Mt. Timpanogos, Utah, July 26, 1945, (Knowlton).

A. maculatae Oest. on **Populus sargenti**, Circleville, Utah, July 11, 1942, and Naples, Utah, July 25, 1945 (Knowlton).

A. maidi-radicis Forbes on corn roots at Roosevelt, 1941, Farmington, 1936 and Castle Valley, July 26, 1936 in Utah (Knowlton).

A. maidis Fitch on grass at Zion National Park, Utah, July 4, 1946; Tucson, Arizona and Naco, Mexico, during late March, 1945 (Knowlton); infesting oats and barley in Dallas, Texas, December 18, 1942 (A. B. Jolley—J. N. Roney).

A. marutae Oest. on **Cirsium**, Toppenish, Washington, July 9, 1947.

A. medicaginis Koch on sweetclover, Casa Grande, Arizona, March 24, 1945 (Knowlton); spinach, Moscow, Idaho, July (T. A. Brindley); **Rumex**, Glendale, Nevada (Knowlton); alfalfa, Graybull, Wyoming, September 12, 1941 (Knowlton); on dodder, Logan, Utah, August 23, 1927 (Knowlton).

A. middletoni Thomas on corn roots at Moab, Utah; feeding on dodder, Logan, Utah, August 23 and September 18, 1927 (Knowlton); on roots and crown of **Tragopogon pratensis**, North Logan, Utah, October 10, 1926 and September 16, 1927 (Knowlton).

A. monardae Oest. on **Monarda**, Monte Cristo, Utah, August 21 and Emmigration Canyon, Idaho, August 14, 1942; Logan Canyon, Utah, August 16, 1927, curling **Monarda** leaves (Knowlton).

A. oenotherae Oest. on **Oenothera biennis**, Zion National Park, Utah, July 10, 1925 (Knowlton); Mt. Rainier, Washington (H C. Bennion).

A. rosea (Baker) in curled apple leaves, Provo, Farmington, Salt Lake City, causing damage in spring of 1945 (Knowlton—C. D. Ashton); Wendell, Idaho.

A. rubicola Oest. on wild raspberry, Shoshone National Forest, Wyoming, September 11, 1941 (Knowlton); black raspberry, Puyallup, Washington, June 19, 1939 (Knowlton); red raspberry, Pleasant Grove, Utah, July 7, 1937 (Knowlton—L. L. Hansen).

A. rumicis L. infesting 40 acres of sugar beets near Medford, Oregon, June 13, 1939 (D. C. Mote); burdock, Moscow, Idaho, July 2, 1941 (T. A. Brindley); alates on tomato, Overton, Nevada, May 20, 1935 (Knowlton); **Cucurbita**, Union Gap, Washington, July 8, 1947.

A. sambucifoliae Fitch at Manassa, Colorado, July 28, 1943 (B. A. Haws).

A. sedi Kalt. on **Sedum**, Puyallup, Washington, July 27, 1937 (H. C. Bennion).

A. setariae (Thomas) on grass, Woodro, Wyoming, September 11, 1941 (Knowlton); Vernal, Utah, August 17, 1940.

A. spiraecola Patch on **Spirea**, in damaging abundance during spring of 1945, 1946 and 1947 at Logan, Springville, Farmington and Brigham, Utah; Helena, Montana, July 28, 1946 (Knowlton); Lethbridge and Waterton National Park, Alberta, Canada, late July of 1946 (Knowlton); Puyallup, Washington (H. C. Bennion).

A. viburnicola Gill. on **Viburnum opulus**, Liberty, Utah, October 9, 1937; and Logan, Ogden and Salt Lake City, spring of 1946; Preston, Idaho (Knowlton).

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